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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/802,188	03/08/2001	Kazuhiko Takaishi	3408.65 517	5899

24978 7590 03/12/2003

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EXAMINER

DAVIDSON, DAN

ART UNIT

PAPER NUMBER

2651

DATE MAILED: 03/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/802,188

Applicant(s)

TAKAISHI, KAZUHIKO

Examiner

Dan I Davidson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5-8,10 and 12-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5-8,10 and 12-14 is/are rejected.
- 7) ☒ Claim(s) 1,3,5-8,10 and 12-14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 29 July 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- ☐ Interview Summary (PTO-413) Paper No(s). _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

1. The amendment filed February 19, 2003 has been received and has been made of record. An Office Action in response to the above amendment follows.

Specification

2. The abstract of the disclosure is objected to because:

(1) On page 34, line 4, the second instance of "position" should be changed to --servo--. This is to alleviate confusion as to the meaning of position signals, defined in the specification to be both servo signals and the demodulated output of servo signals. The same change is to be made at multiple other points in the abstract.

(2) On page 34, line 7, "disk" should be replaced with --disks-- since there are multiple disks in the storage disk device in the preferred embodiment of the invention. This objection applies at other points in the abstract.

(3) All references to the figures (such as disk "1") should not appear in the abstract.

(4) On page 34, line 12, "recording" should be replaced with --storage-- to be consistent with terminology used earlier in the abstract.

(5) On page 34, line 15, "detection" should be replaced with --servo gate--. There is no reason to refer to something using an alternate terminology especially given the number of detected signals in this application.

(6) On page 34, line 15, it is not clear if the servo gate ("detection") signal is the servo gate signal for the head to which switching is directed.

Correction is required. See MPEP § 608.01(b).

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3. The disclosure is objected to because of the following informalities:

✓(1) On page 1, line 9, "read information from or" is confusing and should be deleted.

✓(2) On page 1, lines 19-20, the equating of servo signals and position signals is confusing. See above. This objection applies to all instances in which servo signals are referred to as position signals.

✓(3) On page 1, line 21, "centre" is misspelled. It should read --center--.

✓(4) On page 2, line 2, "disk" should be replaced with --disks--. See above. This objection applies at other points in the specification.

✓(5) On page 2, line 9, reference to Fig. 12 should be made in defining the servo signal demodulator.

✓(6) On page 2, line 10, it should be made clear that the servo signal is detected from the read output of one of the magnetic heads. This objection also applies at other points in the specification.

✓(7) On page 2, line 13, the comma should be deleted.

✓(8) On page 2, line 20, "94" should be replaced with --95--.

✓(9) On page 2, line 22, "distance seek moves" is unclear. Using Applicant's language at page 11, lines 3-4 as a guide, a suitable replacement for the above would be --distance from the target position--.

✓(10) On page 2, line 24, --of the head-- should be inserted after "deviation" for purposes of clarification.

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✓(11) On page 3, lines 25-27, the language is unclear given that the servo gate signals do not detect the servo signals. Acceptable replacement language for "which detect the servo signals" is --which are used in detecting the servo signals--.

✓(12) On page 5, line 5, "to" should be replaced with --from--.

✓(13) On page 6, line 8, "detection" should be replaced with --servo gate--. See above. This objection applies at other points in the specification.

✗(14) On page 6, line 8, it is not clear whether the servo gate ("detection") signal is the servo gate signal for the head to which switching is directed.

✗(15) On page 8, lines 5 and 7, it is not clear to what "detection time" refers. What is being detected here?

✓(16) On page 8, line 6, the first instance of "in" should be replaced with --is--.

✓(17) On page 10, line 8, for the sake of clarity, "show" should be replaced with --identify--. This objection applies elsewhere.

✓(18) On page 10, line 14, "track" should be replaced with --cylinder-- which connotes multiple tracks that are at the same radial distance from the center of their respective disks.

✓(19) On page 10, line 19, --a-- should be inserted prior to "position".

✓(20) On page 11, lines 20-21, it should be clarified that the counter counts the number of reference clock pulses. This objection applies elsewhere.

(21) The discussion at page 13, lines 1-7 and at page 14, lines 12-20 is of great concern to the Examiner. The Examiner's understanding of the Abstract and the Summary of the Invention is that the time difference between servo signals of a head

from which switching originates and servo signals of a head to which switching is directed is used to determine the servo gate signal for the head to which switching is directed (although this is unclear, as indicated above). However, in the above sections of the specification, the implication is that the time difference between the servo gate signal of a head from which switching originates and the servo gate signal of a head to which switching is directed is determined.

(22) The above objection is further compounded in that at page 15, lines 21-24 of the specification, it is written that "the time discrepancies between position (i.e. servo) signals for all heads are stored and the time difference between the current head and the head to which switching is directed is calculated", a statement that is consistent with that written in the Abstract and the Summary of the Invention, but not with the immediately preceding section. The discussion at page 16, lines 12-19 is logically consistent with the discussion at page 15, lines 21-24.

✓(23) At page 14, lines 23-25, the statement "When the time difference T_d is larger than the period T_s , the interval between servo gate signals will be smaller than the period T_s " is not understood by the Examiner.

✓(24) At page 15, lines 22-24, "the time difference between the current head and the head to which switching is directed is calculated" is unclear. The Examiner interprets the above as if the above were changed to --the time difference between the servo signals of the current head and the servo signals of the head to which switching is directed is calculated--.

✓(25) On page 18, line 9, --and-- should be inserted prior to "then".

Appropriate correction is required.

Drawings

4. The drawings are objected to because:

(1) In Fig. 1, there should be an indication that the MCU 11 is receiving an output signal from PD 7. See page 10, lines 17-19 and page 11, lines 1-2.

(2) In Fig. 3, position signal PosA is not depicted correctly.

(3) In Figs. 4 and 8, "reference head" should be replaced with --standard head-- to be consistent with the specification.

(4) In Fig. 7, "sample interval memory" (#35) should be replaced with --sample period memory-- to be consistent with the specification.

(5) In Fig. 10, "Switch to head 0" should be replaced with --Switch to head 1--.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Claims 1, 3, 5-8, 10, and 12-14 are objected to because of the following informalities:

(1) In claim 1, line 2, the semicolon should be replaced with a comma.

(2) In claims 1 and 8, line 3, respectively, multiple storage disks should be claimed to allow for the step of reading first and second discrepancy times (near the end of the claims) to be enabled.

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(3) In claim 1, line 4, "position" should be replaced with --servo--. See above.

This objection applies elsewhere in this claim and also applies in claims 5-6, 8, and 12-13.

(4) In claims 1 and 8, line 5, respectively, "the" should be deleted since it is redundant.

(5) In claim 1, line 6, "a reference head" should be referred to as --a standard head-- to be consistent with the specification.

(6) In claims 1 and 8, line 10, respectively, ", by" should be deleted.

(7) The paragraph at claim 1, lines 9-11 should be rewritten for clarity to be drawn to the general function of the control circuit. Only in detailing the head positioning control method should a specific servo signal read by a specific head be discussed.

(8) In claim 1, line 12, "detection" should be replaced with --servo gate--. See above. This objection applies elsewhere in this claim and also applies in claims 5, 7-8, 12, and 14.

(9) In claim 1, line 16, and in claim 8, line 22, it is best to be able to refer to the head using a single adjective. This can be achieved through clarifying earlier claim language.

(10) In claim 1, line 25, "present head" should be replaced with --current head-- to be consistent with the specification.

(11) In claims 3 and 5, line 2, respectively, "2" should be replaced with --1--.

(12) In claim 5, lines 20-22, it is confusing to give a drawn-out explanation describing the current head and the switched head given that these heads have already been succinctly defined in claim 1. The Examiner wishes to point out that it would be helpful if the drawn-out explanation describing the current head and the switched head is provided at claim 1. However, that said, once terms are succinctly defined, there is no reason to define them again using a drawn-out explanation. This objection also applies to claims 6-7 and 12-14.

(13) In claim 8, line 6, the first instance of "reference" should be deleted.

(14) In claim 8, line 6, the second instance of "reference" should be replaced with --standard--.

(15) In claim 8, line 22, "a" should be deleted.

(16) In claims 10 and 12, line 2, respectively, "9" should be replaced with --8--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1, 3, 5-8, 10, and 12-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

✓ (1) In claims 1 and 8, line 9, respectively, "the position signal" has a lack of antecedent basis.

(2) In claims 1 and 8, line 10, respectively, "said recording face" has a lack of antecedent basis.

(3) In claims 1 and 8, lines 12-14, respectively, it is unclear as to whether the servo gate ("detection") signal is the servo gate signal for the head to which switching is directed (i.e. the switched head).

(4) In claim 1, line 15 and in claim 8, line 16, the Examiner is unclear as to what the phrase "an output signal" is referring.

(5) The language at claim 1, lines 19-22 is not understood by the Examiner.

(6) In claim 1, lines 24-28, and in claim 8, line 19, "discrepancy time" is not defined.

(7) In claim 7, lines 4-8, and in claim 14, lines 4-7, two instances of "the detection time" are not defined.

Claims 3, 5-6, 10, and 12-13 are rejected since they are dependent on rejected independent claims.

Conclusion

8. The Examiner has attempted a prior art search in advance of writing this Office Action. New references with subject matter related to this application are cited below. However, due to the continued unclear nature of the metes and bounds of Applicant's claimed subject matter, the Examiner is still unable to address the claims with regards to their patentability. This Action will once again not be final, since the Examiner has introduced several new objections and formal rejections with respect to the

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specification, claims, and drawings, many of which were not necessitated by Applicant's amendment.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ahn (6,297,926 B1) teaches compensating for interhead track position offset in a disk drive resulting from a servo recording pattern when switching between heads.

Belser (6,081,397 A) teaches a table storing an offset value to be applied to a counter to account for a change from a first to a second head in a disk drive.

Hull et al (6,067,206 A) teach a disk drive controller that stores relative rotational offsets between heads and respective servo wedges on different disk surfaces, ensuring that a next sequential wedge is detected after a head switch.

Lee (WO 94/12981) teaches a head switching method in which a skew time of a recording medium surface is determined so that a sync signal for reading servo information on the recording medium surface is precisely determined when switching to the head used in conjunction with the recording medium surface.

10. The following art is not prior art but is provided since it is pertinent to Applicant's disclosure.

Satoh (US 2003/0007276 A1) teaches a disk drive in which a time difference between servo signals for different heads on different disk surfaces is calculated and stored, and the start timing of servo detection after a head change is controlled using the time difference.


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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan I Davidson whose telephone number is (703) 308-8535. The examiner can normally be reached on Monday-Friday from 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R Hudspeth, can be reached on (703) 308-4825. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

DID
Dan I Davidson
March 6, 2003


DAVID HUDSPETH
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